Springwood Livestock Management Service

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2021 Shenandoah County Fair

4-H/FFA Steer Ultrasound Data Explanation

Column 1:   Tag Number
Column 2:   Exhibitor Number
Column 3:   Live Wt. (provided by Shenandoah County Extension Office)
Column 4:   Carcass Wt. (ending live wt. x 63.5% dressing)
Column 5:   Carcass Wt. Points
Column 6:   Ultrasound rib eye area
Column 7:   Average REA required (based on carcass weight)
Column 8:   REA Points
Column 9:   Ultrasound Rib Fat
Column 10:   Fat Thickness Points
Column 11:   Ultrasound %IMF
Column 12:   Marbling Score (based on %IMF and used to determine quality grade)
Column 13:   Quality Grade (based on ultrasound data, NOT Live quality grade)
Column 14:   Quality Grade Points
Column 15:   Yield Grade (calculated using carcass wt., REA, and back fat)
Column 16:   % Retail Product (calculated based on carcass weight, back fat, and muscling)
Column 17:   Index Points (Beef Empire Days Carcass Index)
Column 18:   Final Ranking

This year steers were ranked using the Beef Empire Days Carcass Index System. This system assigns points in several relevant traits and recognizes carcasses within acceptability windows for several traits.

2021
Shenandoah County 4-H/FFA Livestock Show
Market Steer Show
Ultrasound Carcass Competition

ID	Exhibitor	Live Wt	Carcass Wt	Carcass Wt Points	Ultrasound REA	Avg. REA (for carcass wt)	REA points	Ultrasound Rib Fat	FT points	Ultrasound %IMF	Marbling Score	Quality Grade	QG points	Yield Grade	% Retail Product	Index points	RANK
293	Ashlyn Funkhouser	1401	890	0	15.6	14.5	5.8	0.33	0	06.27	1104	Choice^0	35	2.2	73.8	140.8	1
194	Jacey Shelton	1168	742	-0.19	13.2	12.7	2.7	0.34	0	06.20	1100	Choice^0	35	2.4	72.4	137.7	2
182	Brooklyn Shaw-Clark	1242	789	0	13.7	13.3	2.0	0.39	-1	06.55	1116	Choice^0	35	2.6	71.9	136.0	3
198	Adelynn Lutz	1430	908	0	14.3	14.7	-1.9	0.36	-1	06.56	1117	Choice^0	35	2.8	72.7	132.1	4
199	Jennifer Farmer	1235	784	0	13.0	13.2	-1.0	0.41	-2	06.34	1107	Choice^0	35	2.8	71.0	132.0	5
0109	Lane Stephens	1196	759	0	15.0	12.9	10.3	0.57	-24	06.94	1133	Choice^0	35	2.5	69.3	121.3	6
2363	Ethan Showman	1439	914	0	12.3	14.8	-12.3	0.41	-4	07.40	1153	Choice^0	35	3.6	70.7	118.7	7
295	Olivia Dellinger	1098	697	-2.12	10.3	12.2	-9.1	0.46	-8	07.62	1162	Choice^0	35	3.5	68.7	117.9	8
0111	Houston Kibler	1343	853	0	16.5	14.0	12.2	0.23	-4	04.24	1004	Choice -	0	1.6	76.1	108.2	9
192	Faith Dellinger	1403	891	0	12.9	14.5	-8.0	0.57	-24	07.48	1156	Choice^0	35	3.7	68.2	103.0	10
193	Kyle Lutz	1386	872	0	14.3	14.3	0.4	0.34	0	05.34	1060	Choice -	0	2.6	73.0	100.4	
191	Christian Dellinger	1156	734	-0.45	12.3	12.6	-1.7	0.42	-2	04.94	1040	Choice -	0	2.9	70.5	96.3	
2357	J Carter Heishman	1276	810	0	12.7	13.5	-4.3	0.67	-36	08.24	1187	Choice^0	35	3.7	66.2	94.7	
184	Allie Pool	1361	864	0	13.2	14.2	-5.0	0.50	-1	04.74	1030	Choice -	0	3.3	69.6	94.0	
179S	Brooklyn Shaw-Clark	1239	787	0	12.1	13.2	-5.6	0.43	-2	05.89	1086	Choice -	0	3.2	70.2	92.4	
187	Allie Pool	1103	700	-1.61	11.3	12.2	-4.7	0.23	-4	04.87	1037	Choice -	0	2.6	73.2	91.3	
2361	Maggie Eaton	1231	782	0	11.6	13.2	-8.0	0.38	-1	05.33	1059	Choice -	0	3.2	70.8	91.0	
170	Katelyn Lutz	1237	785	0	13.0	13.2	-1.4	0.45	-8	05.29	1057	Choice -	0	3.0	70.4	90.6	
2358	J Carter Heishman	1330	845	0	13.0	13.9	-4.7	0.75	-40	08.23	1187	Choice^0	35	3.9	65.0	90.3	
291	Rhonnie Miller	1578	1002	0	16.6	15.8	3.8	1.12	-50	09.28	1225	Choice+	35	4.3	60.5	88.8	
2362	Ethan Showman	1271	807	0	11.7	13.5	-8.9	0.46	-8	06.00	1091	Choice -	0	3.5	69.5	83.1	
2352	Olivia Hawkins	1210	768	0	12.0	13.0	-4.9	0.80	-50	07.13	1142	Choice^0	35	4.1	63.6	80.1	
185S	Rhonnie Miller	1352	859	0	13.0	14.1	-5.5	1.45	-50	07.28	1148	Choice^0	35	5.7	52.7	79.5	
189S	Madison Wright	1184	752	0	13.0	12.8	1.1	0.58	-24	05.64	1074	Choice -	0	3.1	68.0	77.1	
2359	Chad Biby	1121	712		11.9	12.3	-2.3	0.57	-24	05.48	1066	Choice -	0	3.3	67.7	73.7	
188S	Nathaniel Farmer	1076	683	-2.70	09.3	12.0	-13.5	0.51	-14	05.04	1045	Choice -	0	3.9	67.2	72.5	
197S	Faith Sortzi	1189	755	0	11.8	12.9	-5.3	0.77	-45	05.47	1066	Choice -	0	4.0	64.1	49.7	

Beef Empire Days
Carcass Index System

The Beef Empire Days Carcass Index is calculated from a base of 100 points with bonus and penalty point adjustments for hot carcass weight (HCW), adjusted backfat, ribeye area (REA), internal kidney-pelvic-heart fat (KPH), and USDA Quality Grade (QG). Carcass traits that are closer to the desired ideal specifications will have higher indices. Bonus points awarded to carcasses having larger ribeyes, low KPH fat, and QG above low Choice will improve indices. The following is a description of the index adjustment procedures for each of the carcass traits.

Hot Carcass Weight

The optimum range for hot carcass weight is defined as 750 to 1050 lbs. for both steers and heifers. The indices of carcasses with weights outside that range are penalized according to the following table.

Hot Carcass Weight Adjustment

HCW	Points	HCW	Points	HCW	Points
500	-24.1	610	-8.55	720	-0.77
510	-22.36	620	-7.52	730	-0.45
520	-20.69	630	-6.55	740	-0.19
530	-19.08	640	-5.65		
540	-17.54	650	-4.82		
550	-16.06	660	-4.05	1050	-1.61
560	-14.65	670	-3.34	1060	-2.12
570	-13.3	680	-2.7	1070	-2.7
580	-12.02	690	-2.12	1080	-3.34
590	-10.79	700	-1.61	1090	-4.05
600	-9.64	710	-1.16	1100	-4.82

The following figure graphically illustrates the adjustments for heifers and steers.
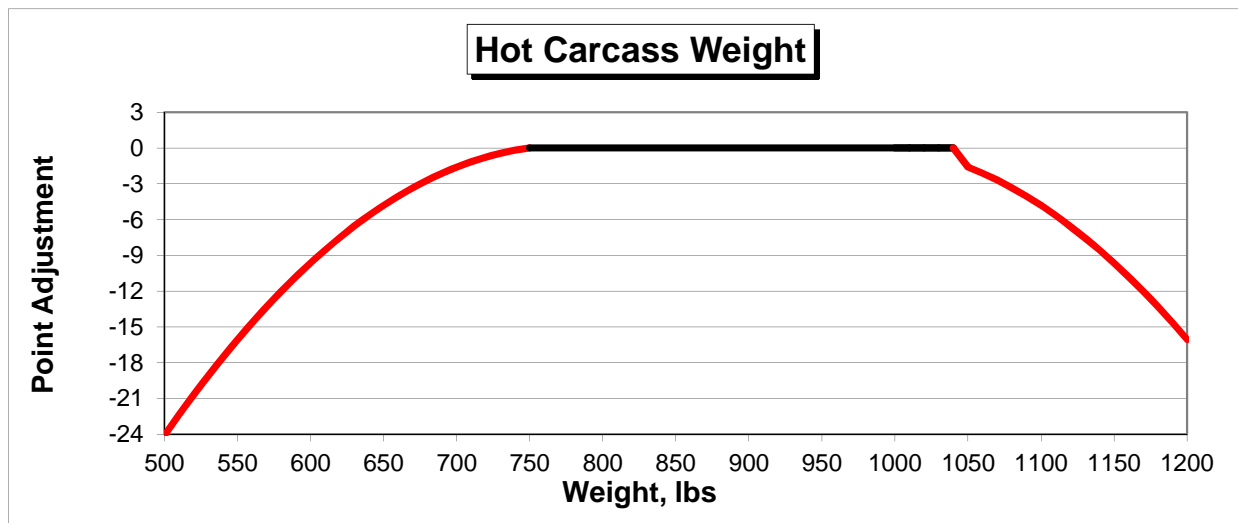
Adjusted Twelfth Rib Backfat Thickness

The optimum 12th rib fat thickness is defined as 0.30 inches which corresponds to a preliminary yield grade of 2.75 for both heifers and steers. Indices are negatively affected for carcasses having less than 0.28 inches or more than 0.36 inches of backfat.
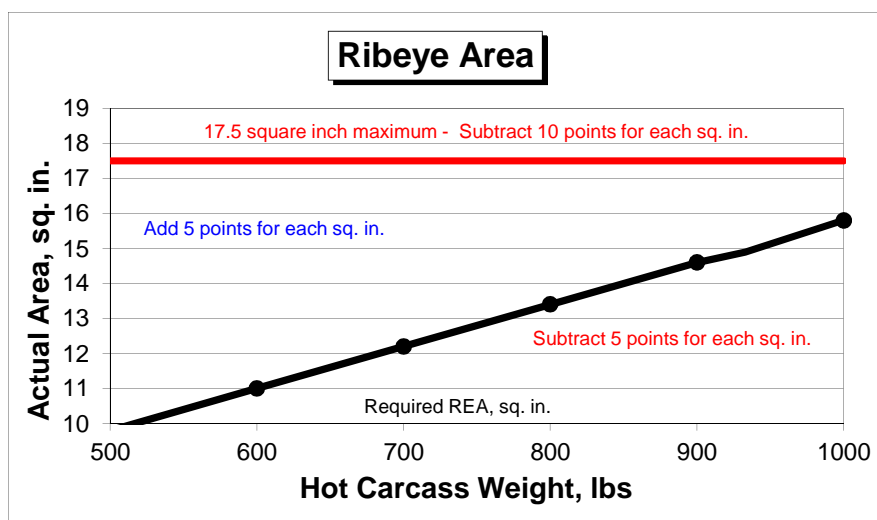
Twelfth Rib Backfat Adjustment

Fat Thickness	Points		Fat Thickness	Points
0.00 - 0.03	-48		0.44 - 0.47	-8
0.04 - 0.07	-40		0.48 - 0.51	-14
0.08 - 0.11	-32		0.52 - 0.55	-20
0.12 - 0.15	-16		0.56 - 0.59	-24
0.16 - 0.19	-8		0.60 - 0.63	-28
0.20 - 0.23	-4		0.64 - 0.67	-32
0.24 - 0.27	-2		0.68 - 0.71	-36
0.28 - 0.35	0		0.72 - 0.75	-40
0.36 - 0.39	-1		0.76 - 0.79	-45
0.40 - 0.43	-2		>0.79	-50

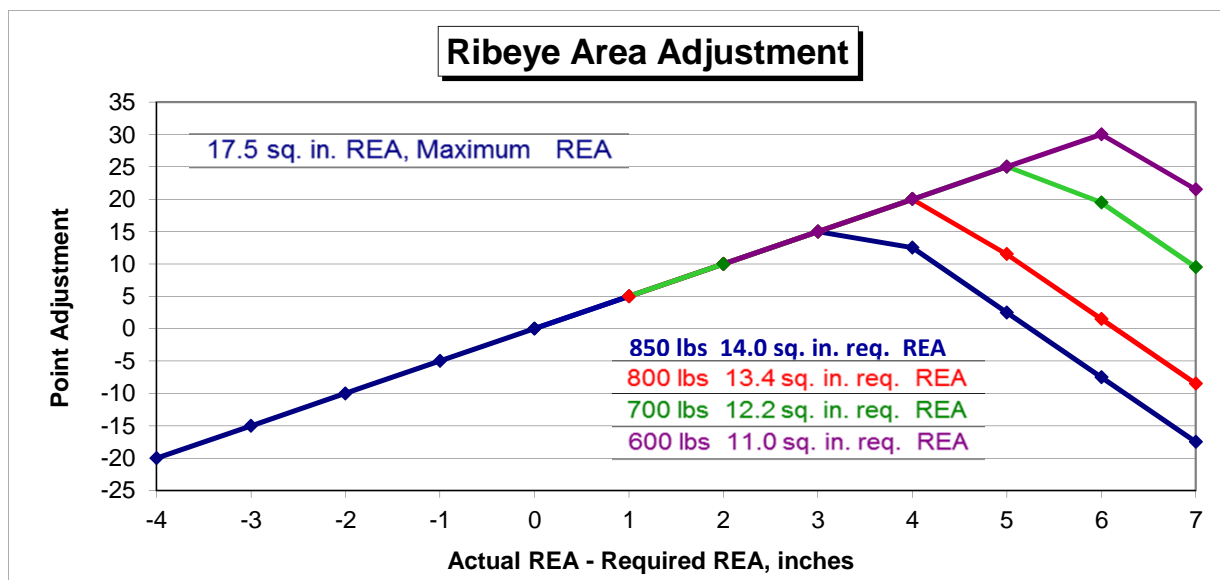The following figure illustrates the adjustment for backfat thickness.
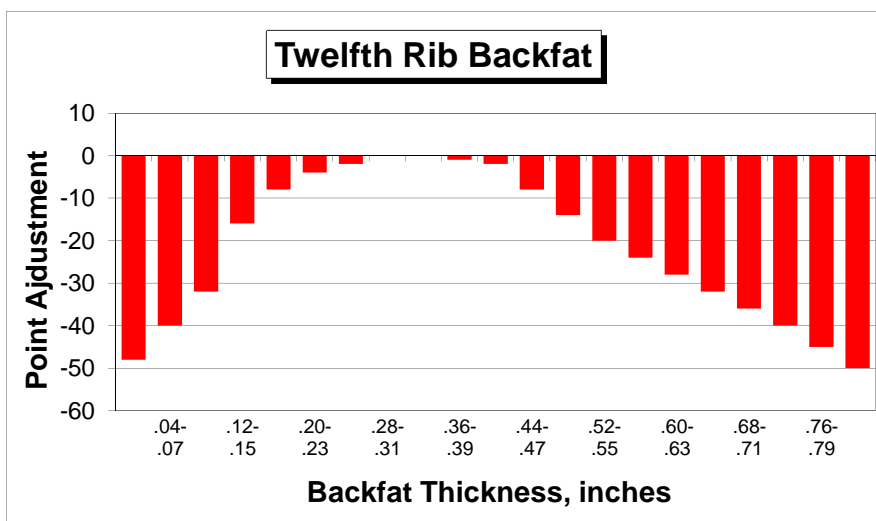
Ribeye Area

A ribeye requirement is calculated for each carcass based on hot carcass weight. The equation for both steers and heifers is: Required REA, sq. in. = HCW x .012 + 3.8. A 5 point adjustment will be made to the index for every square inch that a carcass ribeye area deviates from the required value. There is also a maximum REA of 17.5 square inches for steers and heifers. Carcasses with excessively large ribeyes will be penalized 10 points for each inch, or fraction of an inch, over the 17.5 square inch REA maximim. The relationship of actual and required REA, the maximum REA, and the associated bonus or penalty points is illustrated in the graph below. This is equivilent to the USDA required REA area for yeild grade calculation.

Ribeye Area

Actual Area, sq. in. vs. Hot Carcass Weight, lbs

- 17.5 square inch maximum - Subtract 10 points for each sq. in.
- Add 5 points for each sq. in.
- Subtract 5 points for each sq. in.
- Required REA, sq. in.

The preceding graph demonstrates adjustment for the difference of the actual and required REA for various carcass weights.

Ribeye Area Adjustment

Point Adjustment vs. Actual REA - Required REA, inches

17.5 sq. in. REA, Maximum   REA

- 850 lbs 14.0 sq. in. req. REA
- 800 lbs 13.4 sq. in. req. REA
- 700 lbs 12.2 sq. in. req. REA
- 600 lbs 11.0 sq. in. req. REA

Bonus and penalty points can also be calculated mathematically. For example, an 850 pound steer carcass would have a required REA of 14.0 square inches. If the carcass REA was 16.5 inches the index adjustment calculated as follows:

17.5 Maximum REA
14.0 Required REA
16.5 Actual REA
Difference of 2.5 sq inches x 5 = + 12.5 Bonus Points

Example #2   850 pound steer carcass would have a required REA of 14.0 square inches. If the carcass REA was 18.5 inches the index adjustment calculated as follows:

17.5 Maximum REA
14.0 Required REA
18.5 Actual REA
17.5-14.0 = 3.5 sq inches x 5 = 17.5 Bonus Points
REA Actual +1.0 over Maximum Allowable = -10 Points
This equals a final REA Index adjustment of +7.5 Points
**Note Bonus points are only added for the REA up to 17.5 sq inches
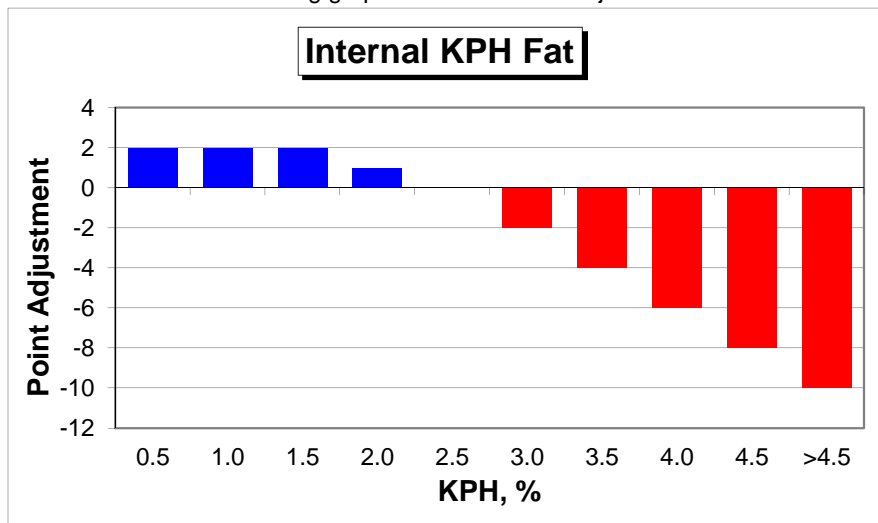
Kidney, Pelvic and Heart Fat Adjustment

The internal kidney-pelvic-heart fat index basis is 2.5%. Carcasses with a lower KPH will receive bonus points while those with a higher KPH will be penalized as shown in the following table.

Internal Fat Adjustment

KPH	Points
0.0-1.5	2
1.6-2.0	1
2.1-2.9	0
3.0-3.4	-2
3.5-3.9	-4
4.0-4.4	-6
4.5-4.9	-8
$\geq$5.0	-10

The following graph illustrates these adjustments.

USDA Quality Grade

To be competitive in the carcass show, a carcass must grade at least low Choice. The index system severely penalizes a carcass grading Select or lower. Bonus points are given to carcasses that grade above low Choice.

Quality Grade Adjustment

Quality Grade		Points
Standard	Low	-80
	Average	-80
	High	-80
Select	Low	-40
	High	-20
Choice	Low	0
	Average	35
	High	35
Prime	Low	60
	Average	60
	High	60

These adjustments are illustrated in the following graph.
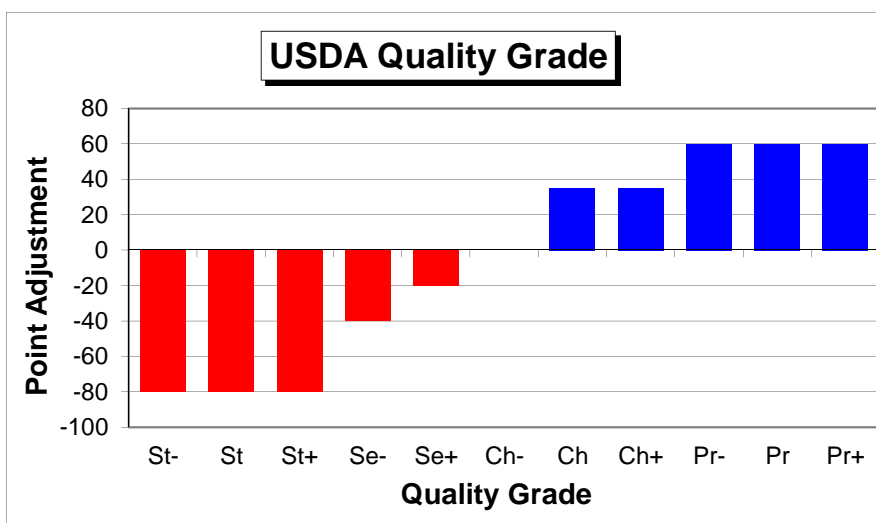
BED Carcass Index Examples

The following table demonstrates the bonus and penalty points for various potential carcass traits using the currently defined Beef Empire Days Carcass Index System.

	Carcass Number					
	1	2	3	4	5	6
Carcass Measurements						
Hot carcass weight, lbs.	750	800	850	900	700	800
Backfat, in.	0.3	0.33	0.4	0.21	0.53	0.37
Kidney-pelvic-heart fat, %	2.5	2.5	3	1.5	2.5	2
Ribeye area, sq. in.						
Actual	15.5	14.4	17.0	15.2	11.0	14.7
Required	12.8	13.4	14.0	14.6	12.2	13.4
Quality grade	Ch-	Ch-	Ch+	Pr	Se-	Ch-
Point Adjustments						
Hot carcass weight	0	0	0	0	-1.6	0
Backfat	0	0	-1	-4	-20	-1
Kidney-pelvic-heart fat	0	0	-2	2	1	1
Ribeye area	13.5	5	15	3	-6	6.5
Quality grade	0	0	35	60	-40	0
Total adjustment	13.5	5	47	61	-66.6	6.5
Index base	100	100	100	100	100	100
Index total	113.5	105	147	161	33.4	106.5

The BED Carcass Index was last updated 5-10-15